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AUTHOR Allard, Carol; And Others
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ABSTRACT

This paper presents descriptions of a variety of learning activities suitable for the elementary grades. The activities were developed by teachers, and contributed by them to this volume. Some of the activities are short while others are intended to be carried out over several days. Paper-and-pencil activities, games, and projects involving making things are included. (SD)

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MATH

SUMMER OF '72

CAROL ALLARD

SUMMER STAFF DEVELOPMENT
Area 1

Florida A&M Univ.
Tallahassee, Florida

SE020 625

ARE YOU ON THE RIGHT TRACK?

Purpose: Reinforce +, - skills and use of number line (1 - 20)

Objectives: 1. Reinforcement of +, - skills
2. Reinforcement of number line skills, +, - (1 - 20)

Make this on a wall at child's eye level:

Materials:
1. 4 sheets poster board 3' x 2½'
2. 25 library book pockets
3. 3' x 5' cards with +, - skills

Directions to teachers:
1. Put facts (+ and -) on 3" x 5" cards.
2. Change facts as children progress.
3. Use library pockets as train cars and houses. Label them as shown in diagram.
4. Put fact cards in appropriate houses.

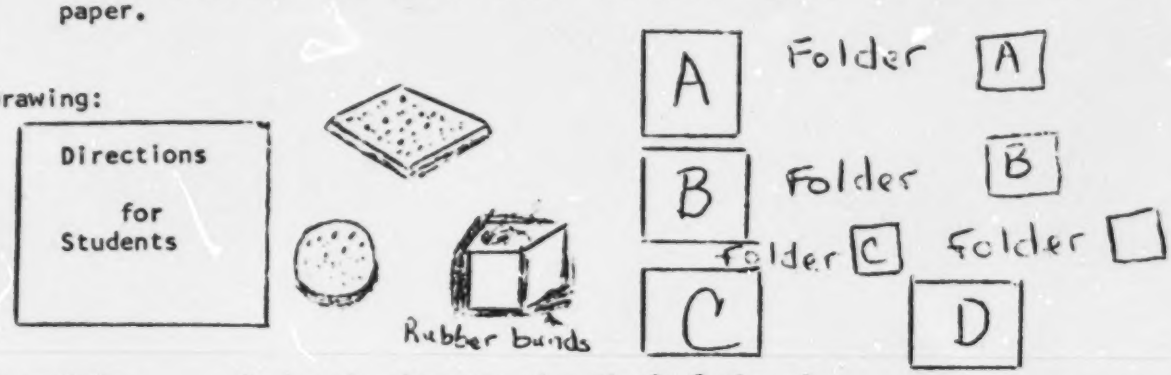
What Children Will Do:
1. Pull skill card from +, - house.
2. Work skill mentally.
3. Place skill card in correct answer pocket
4. Bring a caboose to teacher when finished with skills

Contributed by Carol Allard

THE GEOBOARD & GEOMETRIC FIGURES

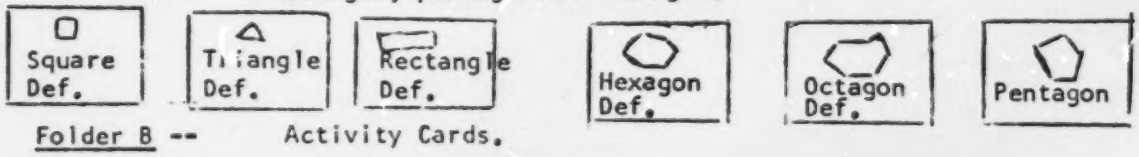
Learning Objective: Working in groups of two, or individually, students will identify, construct and compare a square, rectangle, triangle, octagon, pentagon and a hexagon on the geoboard, then without help students will illustrate properties (n. of sides, shape) of each geometric figure on paper.

Drawing:



Materials: Geoboard - Square and a Circle Geoboard
Rubber bands - assorted sizes
Paper and pencil for students
Activity cards for folder B, C, and D
5 x 8 cards for folder A

Folder A -- Each 5 x 8 card has a graphic representation, name and definition of each of the following shapes: square, triangle, rectangle, octagon, pentagon and hexagon.



Folder B -- Activity Cards.

1. How many different sizes of squares can you make on a 5 x 5 peg square?
2. How many different sizes of squares can you make on 9 pegs in the middle of the board?
3. Make some polygons by stretching one rubber band around 3 or more pegs. Do not let the edges of one polygon touch the edges of another one.
4. Make different kinds of polygons that have the same number of sides.
5. How many different sizes of squares can you make on a circle geoboard?

Folder C - Activity Cards.

1. Make a triangle

2. Make a circle inside the triangle. How many points touch?

3. Make 4 triangles that touch only at the center.

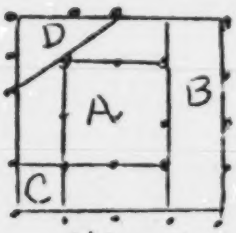
4. Make a square. Now make 2 rectangles inside the square.

5. Make a little triangle in each corner of the geoboard.

6. Make as many triangles as you can that touch at the center and on the sides.

7. Make 6 triangles that touch at the center and are the same distance apart.

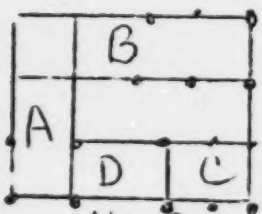
Folder D -- Activity Cards
(Using 1-inch graph paper construct activity cards no. 1-4)



NO. 1

1. This square is one whole.
   -How many units of B will cover the square?
   -A is how many times greater than D?
   -How many units of C will it take to cover the square? How many of A?

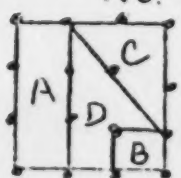
(Each different shape or area is done in a different color, thus:)
A = blue B = red C = purple D = black



No. 2

2. This rectangle is one whole.
   -How many of each area will it take to cover the whole rectangle?

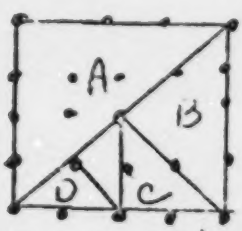
   A_____, B_____, C_____, D_____



NO. 3

3. This square is one whole.
   -How many units of B will it take to cover the whole square?
   -C is how many times greater than B?
   -Area A is equal to what other area?

4. This square is one whole.
   -How many times greater is triangle A than triangle D?
   -How many of triangle C will it take to cover the whole square?
   -Are all the sides of triangle B equal? Triangle A?



NO. 4

5. Write how many equal sides each of the following have:

   (a) square (b) pentagon (c) triangle

   (d) octagon (e) hexagon

6. Draw and name each of the following shapes on your paper:

   a. triangle
   b. pentagon
   c. rectangle
   d. square
   e. hexagon
   f. octagon

Directions for students:

1. Study the cards in Folder A.

2. Use the geoboard to complete the activities in Folder B.
   (*Remainder: polygons have 3 or more straight sides)
   Check your work with answers on the back of each card.

3. Go to Folder C. Use the geoboard. Complete cards and check.

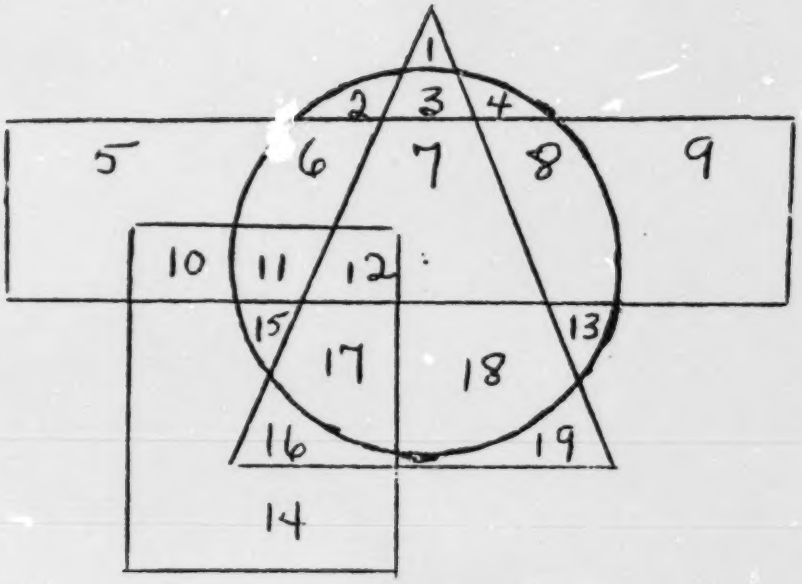
4. Complete activity cards in Folder D. Write your answers on paper.
   When you are finished check your work.

5. Give your paper to your teacher.

Contributed by Vivian White

Purpose: Building skills in following directions and increasing attention span.

Preparation and Materials: Draw a circle, square, triangle, and rectangle on posterboard or colored construction paper. Allow each shape to overlap the others. Number each section of the diagram formed by crossing lines. Below the diagram, write questions pertaining to the numbered sections. Children will need paper and pencil.



Questions: What numbers are,

1. in the rectangle, but not in the circle, square or triangle? (5, 9)
2. in the triangle, but not in the rectangle or square? (20, 19, 3, 1)
3. in the square, but not in the circle or triangle? (10, 14)
4. in the circle, but not in the triangle or rectangle? (15, 2, 4)
5. in the rectangle, but not in the triangle or square? (5, 6, 8, 9)
6. in the square, but not the rectangle or circle? (14, 16, 18)
7. in the triangle, but not the circle or square? (20, 13, 1)

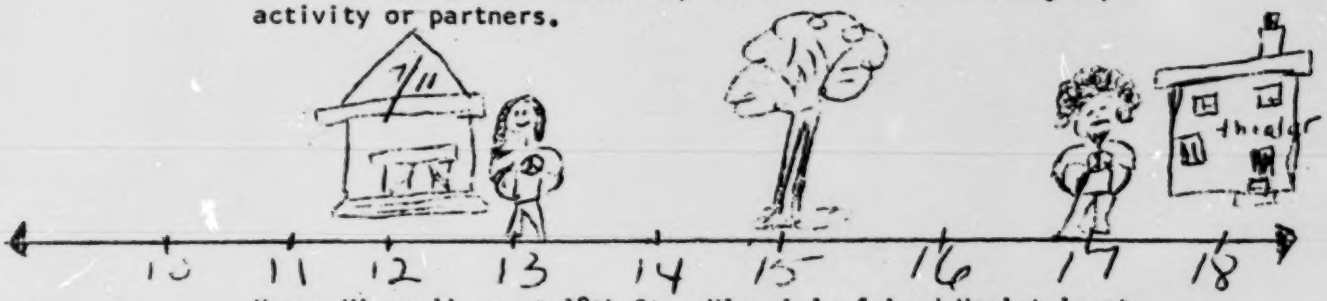
Contributed by Kathy Kalinowski

NUMBER STORIES

Objective: Students will write and solve their own numberline equations. They will make up a story about the problem, and use the number line and characters to demonstrate their story as they tell it.

Materials: a bulletin or flannel board number line cut-outs: characters (boy, girl, dog, etc.) places (pool, tree, 7/11, theater, etc.)

Directions: Students will need initial direction in, and examples of, how to write equations and use the number line to illustrate their their stories. The center may then be used for small group activity or partners.

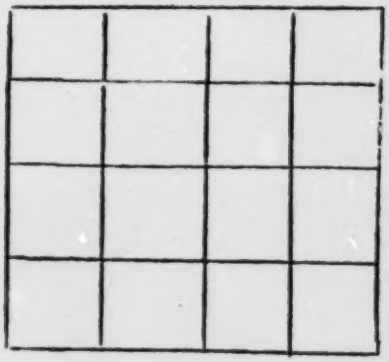


Harry Hippy lives at 18th St. His girl friend Hariet is at the 7 Eleven on 12th St. Move Harry to his girl friend. How many steps back did he go? $18 - n = 12$ $n = 6$

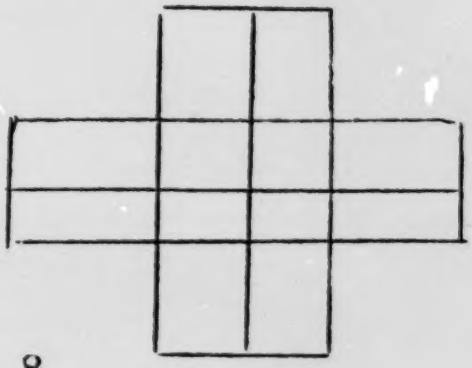
Contributed by Claire Calland

PUZZLERS

Here's a tricky one - so be careful! Count the total number of squares in the figure below. Sixteen? Count again.



Here is another counting puzzle - rectangles this time. Remember, a is any four-sided figure with 4 right angles. How many are there?



FIND THE PERIMETER

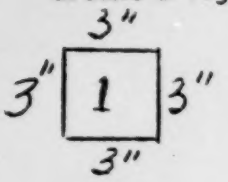
Objective: Students will measure in inches every side of given shapes and will then add to find the perimeter.

Materials: Poster board
clear contact
rulers
shape cards
worksheets
envelope to hold materials OR box center #4 (see p. 10)

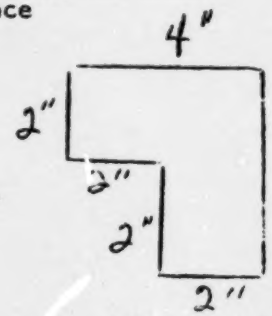
How to Make: Cut poster board into several different sizes, such as: 2" X 9"; 3" X 3"; 4" X 7"; etc. Make some "L" shaped as shown in the example. On the front of the shape, give each side a letter, and put a number in the middle so that you will have card 1, card 2, card 3, etc. On the back of the card, give the measurements and the perimeter.

Directions for students:

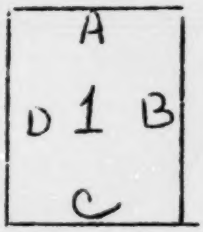
PERIMETER
Perimeter is the distance around a figure.

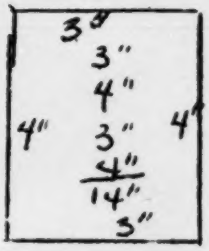


3"
3"
3"
+ 3"
12"



4"
4"
2"
2"
2"
+ 2"
16"





The figure in card 1 has a perimeter of 12 inches. Figure #2 has a perimeter of 16 inches.

1. Select a card, ruler, and perimeter record sheet.
2. Measure each side of the card.
3. Record your measurements on the record sheet, and add to find the perimeter.
4. Check the back of the card to see if you are correct.
5. Try another card.

Perimeter Record Sheet

1. RECORD YOUR MEASUREMENTS FOR EACH FIGURE BELOW:

Figure 1:
Side A = ____"
B = ____"
C = ____"
+ D = ____"
Perimeter = "

Figure 2:
Side A = ____"
B = ____"
C = ____"
+ D = ____"
"

Figure 5:
Side A = ____"
B = ____"
C = ____"
D = ____"
E = ____"
+ F = ____"
"

II. CAN YOU ANSWER THESE QUESTIONS?
1. Which figures have the same perimeter?
2. Which figure has the smallest perimeter?
3. How many more inches is the perimeter of figure 5 than 2?

********** Contributed by Frank Turner**********

"BOX" CENTERS

Purpose: Skill building and reinforcement.

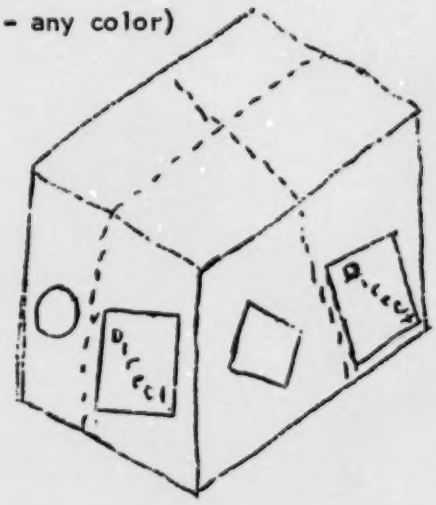
Note: Box centers are flexible. Activities may be changed easily. The same box can contain activities for various ability levels.

BOX CENTER #1

Materials:
Cardboard box divided into four sections with a hole out on each side of the box.
Patterned contact paper.
(4) 5 x 8 index cards for directions.
Problem cards (2" x 3" construction paper - any color)

How to Make: Place dividers in box. Cut a hole in each side of the box. Cover the entire box with contact paper. Slit thru the areas where the holes are and smooth the contact into the inside.

Tape the direction card on each side, put the problem cards in the hole on the side that goes with the directions.



Sample of activities which might be used:

Objective: Children will read and write large numbers; they will solve addition, subtraction and multiplication problems which will include three digit numbers with regrouping.

Direction Cards for sides 1 (add), 2 (sub) and 3 (multiplication)

1. Select 5 problems
2. On your paper copy the number of the problem and the problem.

3. Work each problem.
4. Flip this card up to check your answers.
5. RETURN PROBLEMS TO THE BOX.

Side #1 problem cards:

2. 982 + 7655 + 8 + 93	7. $ .96 8.43 + 6.54	15. 9 6 1 4 2 7 + 3	20. □ 2 □ + 5 □ 8 1217

"BOX" CENTER #1 - continued

Direction Card for Side #4

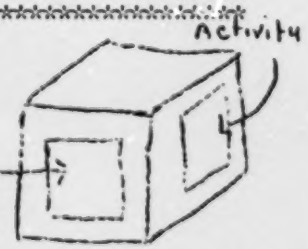
1. Select 10 problems, one at a time.
2. On a sheet of paper copy the number of the problem and write the number. Like this:

You Pick:	Your paper
4. ninety-five	4. 95

3. Flip this card up to check your answers. Or - have your partner check them.
4. Don't forget commas!!!
5. RETURN PROBLEMS TO THE BOX.

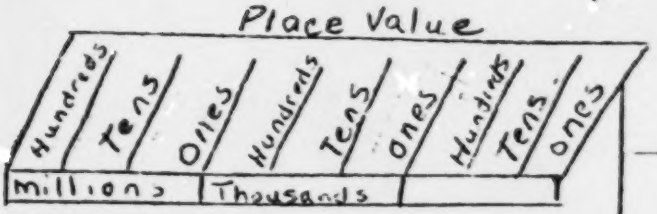
Contributed by Frank Turner

"BOX" CENTER #2



Materials:
Cardboard box
Patterned contact
Acetate folders, activity pockets or large envelopes to be put on each side of the box.
Activities

How to Make: Cover the entire box with contact paper. Attach activities to the sides.



Choose a partner. Practice these activities with your partner.

Which place value does the number in green have?

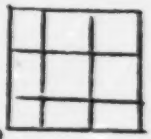
A. 394 C. 451,320

B. 653,297 D. 65,103 Etc.

2. Have your partner read all of the numbers in Activity 1.

Toothpick Squares

Arrange 24 toothpicks into 9 squares like this:



1. Remove 8 toothpicks so you have 5 small squares left.
2. Try forming 5 small squares by removing only 4 toothpicks.

* When you have found your solutions, draw your pictures on a sheet of paper.

Contributed by Carol Parks

BOX CENTER #3

Wheel-A-Math

Objective: Students will practice number facts (+,-,X, or ÷)

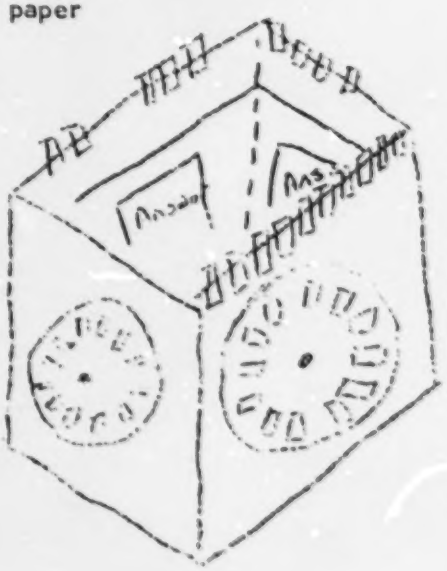
Materials: Cardboard box
Patterned and clear contact paper
4 brad fasteners
48 clip clothespins
4 envelopes or library pockets for answer cards
Poster board
48 pieces ½" x 2" white construction paper

How to Make: Remove the flaps from the top of the box so the box will be open at the top. Cover the sides of the box with patterned contact paper, extending about two inches into the inside.

Cut four circles (wheels) about 10" in diameter. Put 12 number facts on each wheel and cover with clear contact. Fasten to box.

Put answers for the number facts on the ½x2" construction paper, and glue them onto the clothespins so that each clothespin has one answer.

Mark the wheel and each clothespin for side one with one dot, the wheel and clothespins for side two with two dots, etc.



BOX CENTER #3 (cont'd)

Clip clothespins to the top of the box. Clothespins with 4 dots will be clipped to the top of the side with the wheel which has 4 dots, etc.

Glue the answer pockets inside the box on the side opposite the wheel.

Directions: Find a clothespin that has the answer to one of the problems on the wheel. Clip the clothespin to the problem it goes with. On your paper, write the problem with the answer. Keep doing this until you have clipped all the clothespins for that side onto the wheel. Be sure you have all the problems written on your paper. Take the answer card from inside the box and check your answers.

Variations: Blank wheels may be covered with clear contact, and problem cards attached to the wheels by putting tape on the backs of the cards. Answers on the clothespins may also be taped.

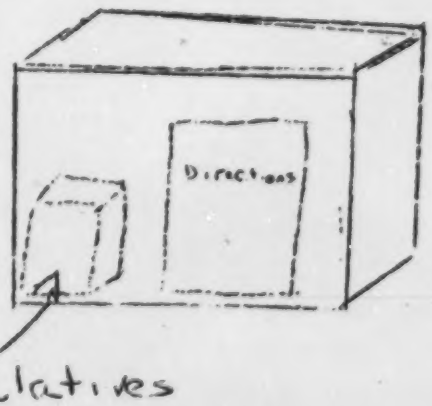
Contributed by Vonda Barrow

BOX CENTER #4

Materials:

Cardboard box (10" X 4" or larger)
Patterned contact paper
Tagboard
Clear contact
Manipulatives (suitable to activity)

How to Make: Remove the flaps from the top of the box so the box will be open at the top. Cover the sides of the box with patterned contact paper, extending about two inches into the inside. Cover the small box (open at one end) with patterned contact paper. Attach the small box to the front side of the large box.



Suggested activity: NAPIERS BONES

Objective: Children will use Napier's Bones to find products when the multiplier is a 1 digit number.

Materials: Box Center #4
Set of "Bones"
Worksheets (poster board or regular paper)

Amaze your Friends
Learn to use
Professors Napier's
Bones
Multiply As ~~Fast~~ As
You Can
Write It Down

Directions to Students: Do you like to multiply? You can solve multiplication problems with Napier's Bones! You can check regular multiplication with them too. Ask your teacher to show you how, then look inside the box.

Sample Activity Card

Solve a multiplication problem here.
Check it with mr Napier's Bones!

	38	84	76
	×2	×5	×4
Product	___	___	___
Check	___		___

Contributed by Elizabeth Seegar

Bowling

Purpose: Reinforcement of multiplication facts and addition.

Materials: Set of from 7 to 10 tubes (the thicker the better)
Ball

Note: This can be a noisy game!

Directions: Cover the tubes with contact paper. Inside each put a different number, like 3, 4, 5,....12. Choose numbers to suit level of students.

Bowling Game #1

Play by yourself or with a partner. Set up the pins on the pattern on the floor. Roll the ball from the starting line. Choose a number from this set (6,7,8,9). Each pin you knock down will be worth that many points. You and your partner must both use the same number for the whole game.

If you choose "6" and you knock down 5 pins, you score 30. Take turns with your partner. The first player to reach 100 wins. Choose another number from the set and play another game.

Bowling Game #2

Play by yourself or with a partner. Set up the pins on the pattern on the floor. Roll the ball from the starting line.

Inside each pin is a number that tells you how many points you get for knocking down that pin.

If you knock down a 2, 4, and 7, your score for that turn will be 13.

Take turns with your partner. The first player to reach 100 wins.

Bowling Game #3

Play by yourself or with a partner. Set up the pins on the pattern on the floor. Roll the ball from the starting line.

Choose a number from this set (2, 3, 4, 5, 6, 7, 8, 9). You and your partner must both use the same number for the whole game.

Inside each pin is a number that tells you how many points you get for knocking down that pin. Multiply that number by the number you chose in part 2 above. Like this: Pretend you chose "3", and you knocked down the 4 and the 7. Your score would be 33. $(3x4)+(3x7)=33$.

Before you start, decide with your partner how many points you will need to win.

SQUARE-IT

PURPOSE: To practice multiplying two one-digit numbers

MATERIALS: Tagboard or poster board, set of 36 1"x1" or 3/4" x 3/4" cards
clear contact

Directions: Make each small square 2x2 or $1\frac{1}{2}$x$1\frac{1}{2}$. Write problems in top half of squares. Cover with clear contact.
Make the playing cards $\frac{1}{2}$ the size of the small cards. Put the answers to the problems on these cards.

4 x5	3 x7
7 x6	5 x0

8 x2	6 x2
7 x9	3 x1

12 x 2	9 x5
1 x3	7 x7

6 x6	4 x6
6 x7	2 x0

5 x5	7 x3
2 x2	3 x3

2 x6	6 x4
9 x7	7 x5

5 x8	20 x 2
9 x8	0 x5

5 x8	8 x9
4 x1	3 x4

Deal out 6 squares face down for each player. Play proceeds clockwise by placing the small cards face side up on matching squares. After each play draw card from pile.
Last person to fill center square gets 25 points.
Last person to fill any middle square gets 50 points.
Last person to fill any outside square gets 100 points
Keep a running score.

10 x 2	8 x3
9 x4	5 x7

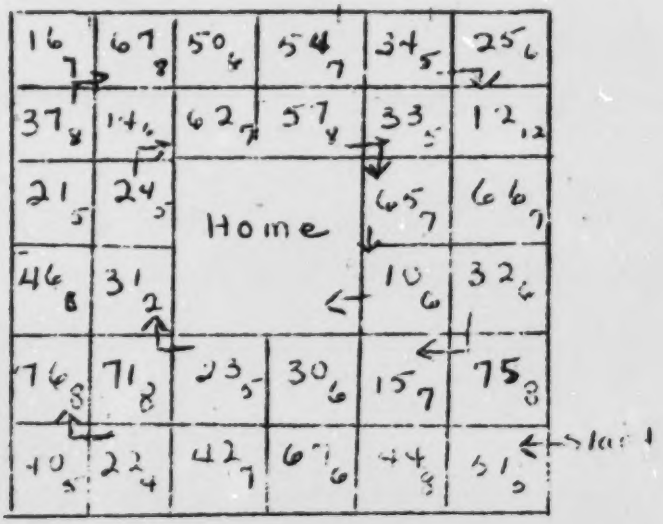
REMAINDERS GAME

OBJECTIVE:

Students will divide a 2 digit number by a one digit number and state the remainder.

MATERIALS:

Dice
Poster board
Clear contact
HOW TO MAKE: Make a 6 square by 6 square grid on the posterboard. Fill in squares as illustrated. Write the rules of the game on the posterboard. Cover with clear contact.



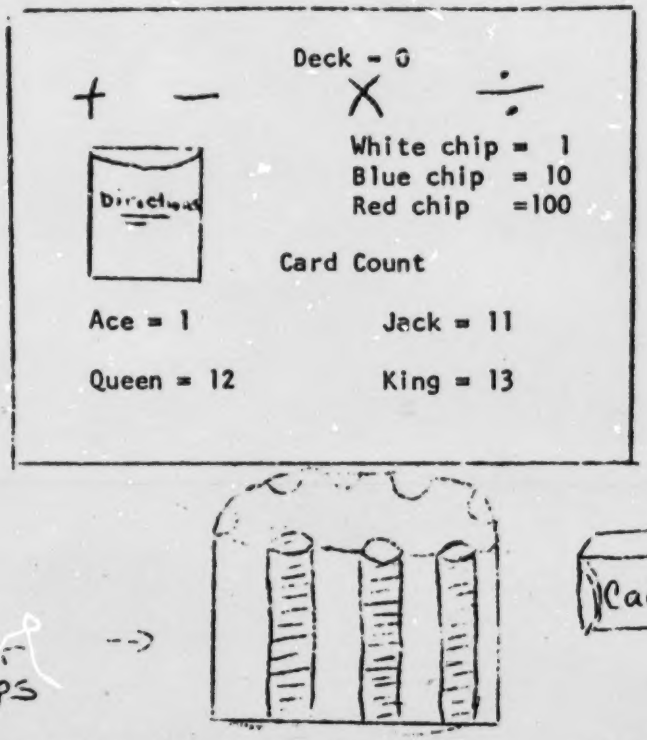
DIRECTIONS:

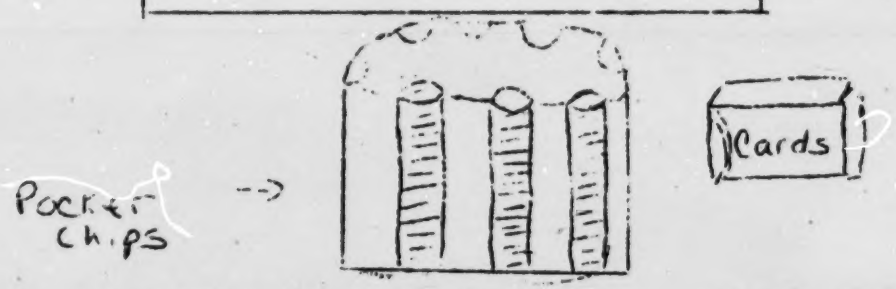
2 may play, or 2 teams. Take turns. Follow the arrows around the board to home. You may move 3 spaces for a correct answer. If you make a mistake, move back 2 spaces.

Divide the little number into the big number. Say the <u>remainder</u> only. Like this -- if your number is 37_5 you will say 2, because $37 \div 5$ is 7 with a remainder of 2. Player #1 puts his marker in the starter square. When he gives the correct remainder for that square, he moves forward 3 squares. Player #2 starts in the 2nd square. Always give the remainder for the square your marker is in. First one "HOME" wins! Good luck!!

Deck - 0

Objectives: Student will add, subtract, multiply or divide using the numbers 1 thru 13. Student will regroup ones, tens and hundreds.





Materials: Poker chips - 100 white, 50 red, 50 blue. Deck of playing cards, Poker chip holder or other container. 4 direction cards.

Directions for Children: Shuffle cards and place them face down. Each player takes one card from the top and places it face up. High card begins.

1. Shuffle cards, place face down.
2. Take 2 cards, place them face up on the table.
3. Compute your cards, take the number of chips you need.
4. Put your cards in the discard pile.

Note: Teacher, put directions on separate cards and put in folder.

Directions for addition, subtraction, multiplication and division are in the folder.

Direction Cards

Addition: Take 2 cards, add them together and take that number of chips. Each time you get 10 white chips you must turn them in for 1 blue chip. 10 blue chips must be turned in for one red chip. This should be done before you put your cards in the discard pile. Winner is the player with the highest value in chips.

Subtraction: Take 2 cards, find the difference between the 2 cards and take that number of chips. If you turn over a low card first, then a high card, i.e. 2 and 8, you must subtract 2 from 8, which equals 6. You would then take 6 white chips. If you get 2 cards the same, your answer is zero, you don't take any chips. Your turn is over and the next player plays. The winner for subtraction is the player who has the lowest value in chips.

Multiplication: Take 2 cards, multiply them and take that number in chips. Remember to regroup ten white chips for one blue chip and ten blue chips for one red chip. The numbers in multiplication are larger than for any other game. In order to keep enough white chips and blue chips in the holder, you must regroup before you discard your cards. The winner is the player who has the player who has the greatest number in chips.

Division: Division flash cards must be used. The chips are counted the same way. Each player turns over one card each turn. Chips should be regrouped. The winner for division is the player who has the lowest value in chips.

Directions for the teacher: Students working on regrouping should take the white chips first, then regroup, ie. two cards 10 + 8 = 18. Student should count out 10 white chips and place them above the 8 card. He should then take 10 white chips from his pile and put them back in the holder and take a blue chip.

During any game, no player should put his cards in the discard pile until he has regrouped, ones and tens. The more able students may take the least number of chips, ie., 13 x 13 = 169. He may take 1 red chip = 100, 6 blue chips = 60 and 9 white chips.

There are no penalties for making mistakes in computation. Each player should be encouraged to check the accuracy of the other's computation.

Two decks of cards may be used for more players. Shuffle them together.

Variations for Winning the Game

1. Set a time limit. The player with the highest value in chips at the end of the specified time wins.

2. Set a number limit. The first player to reach the limit (500, 100, 1,000) wins.

3. Set a number of turns each student will have. Use the following chart to determine how many cards your students will need. If cards need to be discarded, be sure to discard them before play begins.

52 cards - Use all Kings, Queens and Jacks

Highest card	
13 + 13	2 players - 13 turns
13 - 13	3 players - 8 turns - discard 4 cards
13 X 13	4 players - 6 turns - discard 4 cards
	5 players - 5 turns - discard 2 cards
	6 Players - 4 turns - discard 2 cards

48 cards - 4 Kings removed
Highest card

12 + 12	2 players - 12 turns
12 - 12	3 players - 8 turns
12 X 12	4 players - 6 turns
	5 players - 4 turns - discard 8 cards

44 cards - 4 Kings, 4 Queens removed
Highest card

11 + 11	2 players - 11 turns
11 - 11	3 players - 7 turns- discard 2 cards
11 X 11	4 players - 5 turns - discard 5 cards
	5 players - 4 turns - discard 4 cards

40 cards - 4 Kings, 4 Queens, 4 Jacks removed
Highest card

10 + 10	2 players - 10 turns
10 - 10	3 players - 6 turns - discard 4 cards
10 X 10	4 players - 5 turns
	5 players - 4 turns

Contributed by B. A. Carey

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BINGTAC

Purpose: To practice multiplication facts (4's through 9's)

Materials: poster board, clear contact, dice (marked 4, 5, 6, 7, 8, 9), crayons, and paper towel

Directions: Make two Bingtac boards as illustrated. Cover with clear contact. Each player needs his own Bingtac board and a crayon.

How to play: Decide on operation (addition or multiplication). Roll the dice, one at a time. Call out the sum or product. (If a 4, then a 5, are thrown, the answer (20) will go in a different square than if a 5, and then a 4, are thrown.) Write the answer in the proper square. If you throw doubles, take another turn! If a wrong answer is called, lose that turn. Six in a row, column or diagonal wins. Wipe the board clean when through!

	4	5	6	7	8	9
4						
5						
6						
7						
8						
9						

Multi-fact

Objective: The student can determine the multiples of the numbers 2 through 10.

Purpose: The student is provided practice with number facts in a game setting. The relationship between factors and multiples is strengthened.

Materials: A set of 42 playing cards with the following numbers on them: 2,3,4,5,6,7,8,9,10,12,14,15,16,18,20,21,24,25,27,28,30,32,35, 36,40,42,45,48,49,50,54,56,60,63,64,70,72,80,81,90,100, Wild Card. The set can be made quickly on 3" x 5" cards; put two numbers on each card, cover them with clear contact, then cut in half.

Object: To play all of the cards held in one's hand.

Rules:

1. Each player draws a card. Highest number deals.

2. The dealer deals out the cards - 2 players, 7 cards each; 3 players, 6 cards each; 4 players, 5 cards each.

3. Place the remaining cards face down and turn the top card face up.

4. The player to the left of the dealer plays first. He must play a card that is a multiple of the largest 2 through 10 factor of the face-up card.
   Like this: Suppose the face-up card is 18. 2,3,6, and 9 are factors of 18. Since 9 is the largest 2 through 10 factor of 18, a multiple of 9 must be played.

5. When a card is played, the player may choose to call it a multiple of a different 2 through 10 factor. The next player must then play a card that is a multiple of this new factor.
   Like this: If 45 is played as a multiple of 9, the player may choose to call it a multiple of 3, or a multiple of 5, since both 3 and 5 are also factors of 45. Whichever is chosen, (3,5, or 9) the next player must play a multiple of the factor chosen.

6. If a player does not have a card that can be played, he must draw another card from the deck. If the card drawn is a multiple of the factor called by the previous player, the card may be played. Otherwise, he loses his turn.

7. The wild card may be played as a multiple of any number. The player may then call any 2 through 10 number. The next player must then play a multiple of the number called.

8. If a player makes a mistake, another player may challenge him. If the challenger is right, the player must take his and lose his turn. If the challenger makes a mistake, he must draw a card and lose his next turn.

9. If all the cards have been drawn before the end of the game, leave the top card from the discard deck face up on the board, reshuffle the deck, and place the deck face down on the board and continue to play as before.

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TOP IT

(Played like War)

PURPOSE:

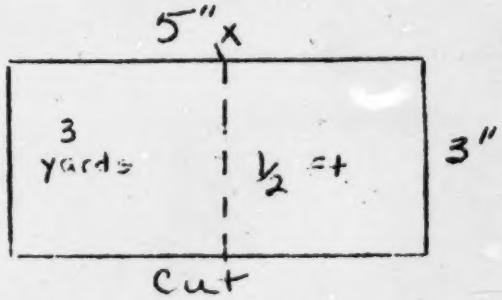
Reinforcement of operations with whole numbers; ordering fractions and finding equivalents; or linear measurement.

MATERIALS:

3 x 5 cards or tagboard
clear contact paper

NOTE:

A deck of playing cards can be made quickly on 3 x 5 cards. Put two numbers on each card, cover with clear contact, then cut in half. For a fancy deck, cover the back of card with a patterned contact before cutting.



DIRECTIONS:

1. Two may play this game.

2. Deal all the cards, face down. Put your cards in a stack face down in front of you without looking at them.

3. Each player turns over his top card in the center of the table. Whoever has the highest number wins, and puts the two cars at the bottom of his stack.

4. If there is a tie, each player puts two cards, face down, out in the middle. The next card is shown face up. Whoever has the highest card wins all cards.

5. Continue turning over the cards, one at a time, until one player has all the cards. He is the winner.

SAMPLE DECKS OF CARDS:

Measurement- Put measurements similar to these on your cards: 3 yd; $\frac{1}{2}$ ft.; 9 ft.; 3 ft.; 8 in.; 24 in.; 18 in.; 36 in.; 1 ft.;

10 in.; 2/3 ft.; 1/3 ft.; 2 ft.; 12 in.; 2 yd.; 4 in.; 1 yd.; $2\frac{1}{2}$ ft.; 72 in.; $1\frac{1}{2}$ in., 3 in.; $\frac{1}{4}$ ft.; 6 ft.; 6 in.;

Fractions - 1/6; 2/6; 3/6; 4/6; 5/6; 6/6; 1/5; 2/5; 3/5; 4/5; 5/5; 1/4; 2/4; 3/4; 4/4; etc.

Addition and Subtraction to 18 -- 12 - 8; 12 - 9; 12 - 7; 12 - 6 17 - 9; 17 - 8; 8 + 7; 8 + 9; 6 + 6; etc.

LONESOME GEORGE

(Old Maid)

PURPOSE:

To review the basic number facts in the four operations.

METHOD AND MATERIALS:

36 2" x 3" cards, containing 18 matched pairs of number facts, i.e...

$$\begin{array}{r} 5 \\ +\ 4 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ +5 \\ \hline \end{array}$$

The game of Lonesome George needs at least 4 players and not more than 6. Have children sit around a table. Choose 1 child to place any one card face down in the center of the table. He then deals out all the other cards to the players.

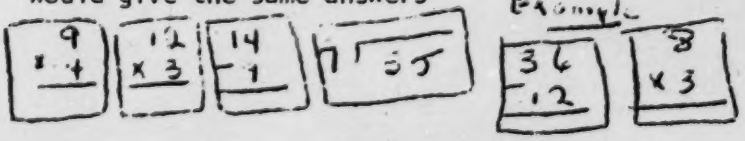
If a child is dealt any cards that match, he places them face down on the table in front of him. Players take turns drawing a card from their neighbor on the left. Go clockwise around the table. Each time a card is drawn that makes a pair, the pair is put on the table.

At the beginning of the game one card was placed face down in the center of the table. That means that one card in the deck will have no mate. That card we call Lonesome George.

The first person to match all the cards in his hands is the winner. The person who has "Lonesome George" at the end of the game is the loser.

VARIATION:

In higher grades, the matched pairs may be problems which, if worked, would give the same answers



Purpose: to develop reasoning skills to practice multiplication facts

W H A T ' S W I T H

T H E

C H E C K E R B O A R D ?

....., Checkers, of course!

Game #1

You will need: a checker board, a set of checkers with numbers (1-9) on them, and a score sheet.

How to Play: Play like regular checkers, - but - when you jump, multiply the value of your checker times the value of the checker you jump. Like this: Your #6 jumps a #4. 6 X 4 = 24, so you score 24 points for that jump. Keep score for all your jumps - highest score wins. OR, you may set a time limit, like 4 minutes. The one with the highest score at the end of 4 minutes wins. OR, the first to reach 200 wins. Make your own rule for kings!

Game #2

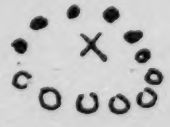
You will need: A set of checkers and a checkerboard with multiplication facts attached to the playing squares.

How to Play: Play like regular checkers, - but - before you move or jump into a square, you must give the correct answer to the fact in that square. If you make a mistake, you lose your turn.

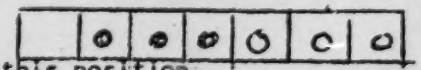
* * * * * * * * * * *

CHECKER CHALLENGES

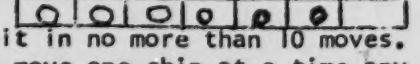
Arrange 6 black and 6 red checkers in a circle as shown below. Rearrange the checkers in the fewest number of moves so they alternate red, black, red, black, etc. You are not allowed to go outside the circle, but you may have one checker in the middle at any time. A checker can be moved to an adjacent vacant space, or it can jump an adjacent checker in the circle, provided it lands in an empty space. If you can't do this in fewer than 15 moves, try again!



You will need 3 red and 3 black checkers. Copy the diagram. The object is to get from this position



to this position



Do it in no more than 10 moves. You can move one chip at a time any number of spaces, in any direction.

S'MAD

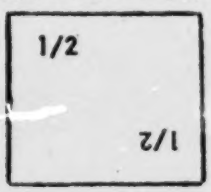
(Played like Gin Rummy)

PURPOSE:

To review the four basic operations with fractions.

MATERIALS:

The deck consists of 52 cards in the form shown below:



The deck should contain:
Five cards, 1 each of the following: 3/2; 4/3; 5/4; 7/6; 13/12

Thirty-eight cards, 2 each of the following: 1/2; 1/3; 2/3;

1/4; 2/4; 3/4; 1/6; 2/6; 3/6; 4/6; 5/6; 1/12; 2/12; 3/12; 4/12;

6/12; 8/12; 9/12; 10/12

Nine cards, 3 each of the following: 5/12; 7/12; 11/12

OBJECT OF THE GAME:

The first player to reach 25 points wins the game. Other goals for determining a winner might be:
1. A numerical score less than 25 points.
2. A specific period of time (e.g., 15 minutes for a game; the player with the highest score wins).
3. A specific number of hands (the player with the highest score wins).

It is important that the goal of the game be clearly stated before play begins. With a classroom set of cards S'MAD 1 can be extended into a round-robin tournament. (single or double elimination)

NUMBER OF PLAYERS:

Two to five

BASIC RULES:

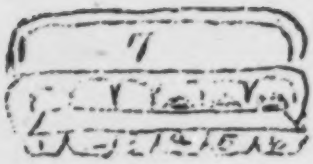
1. Shuffle the deck and deal 7 cards face down to each player.

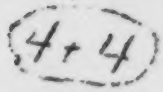
2. Put the remaining cards in the center of the table and turn the top card face up beside the deck.
3. Each player looks at his cards to see if he can combine them into books that will equal 1, using any operation or combination of operations (addition, subtraction, multiplication, or division).
4. Multiplication by zero is not permitted.
5. Play starts with the person to the left of the dealer and moves clockwise.
6. A player may pick up the top card from either pile, and after drawing, must discard one card from his hand face up on the discard pile.
7. Play continues until someone is able to lay down all 7 cards in combinations of books and discard one card on the discard pile.
8. A person may not lay down any of his cards until he has all seven in books of 2 or more cards. When one person lays down his seven cards in books, he has won the hand and all drawing and discarding must stop. After the winner has laid down his hand, the other players may lay down what books they have in their hands. After all books have been laid down, scoring begins.
9. Score 1 point for each card played in a book. Deduct 1 point for each card left in the hand.
10. If the entire deck is used, play stops and each player lays down his books. No one may draw from the discard pile.
11. After all the books are laid down face up, they may be challenged. The person who challenges correctly takes all of the challenged player's books. If the person who challenges is incorrect, he loses all of his books to the person he challenged.
12. A person may also be merely asked to explain the operations and groupings used. This does not constitute a challenge.

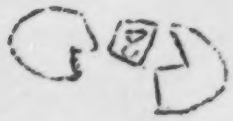
SCORING VARIATIONS:

1. The person who lays down all of his cards gets a 3 point bonus.
2. Play by variation 1 above, except use a one minute or one-half minute egg timer to limit the time opponents have to lay down their books and/or challenge the player who lays down his cards first. Other timing devices could be substituted.

LATTICE MULTIPLICATION







THE VERSATILE EGG CARTON

PURPOSE:

Reinforcement of addition, subtraction, multiplication facts

MATERIALS:

Egg cartons, discs, beans, buttons, etc. for tossing; sets of markers (construction paper scraps are fine - 12 red, 12 blue, etc.)

NOTE:

Let the children set the distance from which tosses must be made.

GAME #1 - SOLITAIRE

Mark the cups in random order from 1 to 12. The student then tries his skill with these challenges:

1. How many tosses will it take you to score 30 or more points? 50 or more points?
2. Score 50 or more points in 7 tosses - you're GREAT!
   Score 50 or more points in 6 tosses - you're GREATER!
   Score 50 or more points in 5 tosses - you're GREATEST!
   Score 50 points in exactly 9 tosses, etc.

GAME #2 - ADDITION

Mark the cups in random order from 1 to 12. 2 to 4 may play. Each player tosses once to see who goes first. Take turns, with two tosses each turn. Each player keeps his own running score. The first to reach 100 points wins.

GAME #3 - SUBTRACTION

Play like the addition game, but score the difference between the 2 numbers hit. Play for 50 points.

GAME #4 - MULTIPLICATION

For this game, the 11 and 12 cups may be covered with zero, if desired. It is played like the above games, but this time multiply the value of the two cups for your score. Play to 500.

GAME #5 - COVER-UP MULTIPLICATION

Label the lid of the carton with a number -- like seven. Write the multiples of seven in the cups so that each cup will have one multiple. Glue the game directions inside the lid. Each player will need a set of cover-ups (12 red for one player, 12 blue for opponent.)

DIRECTIONS for students: Roll the dice. Multiply the total of the two dice by seven. Cover that number in the carton. Take turns. The first one to cover all the numbers wins. LIKE THIS: You roll a 4 and a 2. Your total is 6. You multiply 6 X 7 and get 42. OR - you may cover 28 (4 X 7) and 14 (2 X 7).

GAME #6 - THE BIG EGG

Frank Turner contributed the following activities for use with a 3 dozen egg carton. The games are quite flexible and open-ended - let the students set their own rules and develop their own variations!

Mark the cups in random order using the numbers 1 through 15.

A. Addition
- Toss three discs. Add the value of the three cups for your score. your score. Take turns. The one with the highest score after 5 turns wins. Or, the first to score 250 points wins, etc.
- Increase the number of tokens tossed each turn.

B. Subtraction
- Toss two discs. Subtract to find your score.
- Toss three discs. Add two and subtract one to get your score. Like this: you hit a 9, a 7, and a 10. To get the highest score you add 10 and 9, then subtract 7.

C. Multiplication
- Toss two discs. Multiply to find your score.
- Toss three discs. Multiply two of the numbers and add the third to get the highest score.
- Toss three discs. Multiply to find your score.

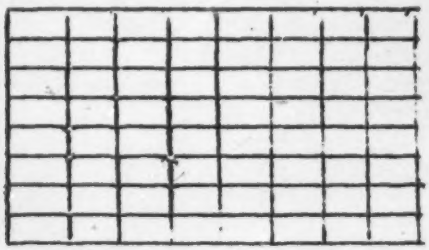
1. If today is Tuesday, is the day that follows the day that comes after the day that precedes the day before yesterday Monday?
ANSWER: Yes

2. If there are four cars ahead of a car, four cars behind a car, and a car in the middle, what is the fewest number of cars possible?
ANSWER: 5

3. Find the smallest number which when divided by 2, 3, 4, 5 or 6 leaves a remainder of 1 in each case. ANSWER: 61

4. A man paid a $63.00 debt, using no singles. What bills did he use? 1--$50. bill, 1--$5. bill, 4--$2. bills.

5. Make the following diagram on a sheet of paper and darken 8 of the 64 squares, making sure that no darkened square is on the same horizontal, vertical or diagonal line as another darkened square. ANSWER: Squares 2, 4, 6, 8, 1, 3, 5, 7.



KALAH

(Game of Intelligence)

Materials: Egg carton (as illustrated) 36 beans or markers.

Directions: 2 may play. Each player uses a different color bean or marker. Put three beans in each pit. Each player has the 6 small pits on his side and the large pit (Kalah) to his right. The object of the game is to get as many beans as possible in the player's own Kalah. A player picks up all the beans in one of his pits and drops them one by one in the pits, moving to the right. He may put only one bean in each pit. He may drop one bean in his Kalah as he comes to it. Moving on around he may drop one bean in each of his opponent's pits but <u>not</u> in his opponent's Kalah.
If the last bean dropped by a player lands in his own Kalah, he gets another turn. If the last bean dropped lands in any empty pit, he gets all of the beans in the opposite pit and puts them in his own Kalah along with the bean that captured them.
The game is over when one player "goes out" -- when all his pits are empty. At this time the opponent puts all the beans left in his pits in his own Kalah. The player with the most beans in his Kalah at the end of the game is the winner.

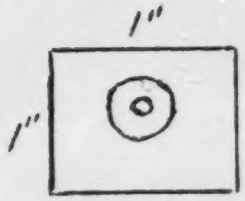
Ring - 0

Objective: The student will regroup to show place value in a game situation.

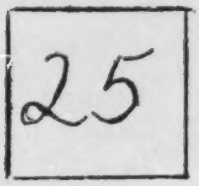
Purpose: This game gives practice with addition and multiplication of whole numbers, and may be adapted for use with decimals and fractions.

Materials: Board (about 10" X 12")
10 nails for pegs
Place value rings or washers and container
Numeral cards and container

Playing board. Place value names may be written on tape and taped on the board. This is easily removed, to be used for decimals or fractions.



Place value rings. Use tagboard. Punch hole in center, paste reinforcement rings on top. OR, washers may be used.



Number cards. At least 2 each of 1 thru 9, and at least 30 two and three digit numbers.

Directions:

1. Two may play.
2. Each player draws a square. The highest number plays first.
3. The first player draws two square cards, and multiplies the numbers on the squares. Like this: 2, 25 2X25 = 50.
4. Next, draw enough rings to place on the pegs to show the total. (To show 50, five rings would be placed on the Tens nail.)
5. If an error is made, all rings are forfeited and player must begin again on his next turn.
6. The player who reaches the limit first wins. (Limit should be set before the game begins. If playing for a 1,000 limit, the first player to show 1,000 or over on his pegs, wins.)

Note: The game may be played in the same manner, using just addition.

Contributed by Vivian White

SPACE 'N PLACE PRACTICE

Objective: Student will form numbers correctly and will use the correct form and spacing when working addition, subtraction, multiplication and division problems.

Materials: Limited notebook paper (7 sheets) Clear and patterned contact paper. Crayons, Paper towel

Directions: Write directions and sample problems on notebook paper. Cover front with clear contact, and back with patterned contact.

① How well do you write your numbers?
Copy these!

1 _ _ _ _ _ _ _ _ _ _ _

2 _ _ _ _ _ _ _ _ _ _ _

3 _ _ _ _ _ _ _ _ _ _ _

② Keeping columns straight is important!
Copy the problems here

237
+461
698
etc.

③ Watch spacing when multiplying!
Copy the problems here

394
X 6
2364
etc.

④ Division can be tricky! Do these carefully
Copy the problems here

9⟌3789
-36
18
-18
9
-9

⑤ Now solve some of your own problems. Use the correct form! Solve 4 addition problems.

⑥ Solve 4 subtraction problems.

Solve 2 multiplication problems.

⑦ Solve 2 long division problems!

Directions for Students:

1. Start with sheet #1 and work through to sheet #7.
2. Use only crayon on the sheets.
3. For sheets #1, #2, #3 and #4 check your own work.
4. For sheets #5, #6, and #7, ask your partner or teacher to check your work.
5. After you complete a sheet and check it erase it with a scrap of paper towel.

JUMP A NUMBER

Objective: To learn number families (1 - 10) through a task oriented process.

Materials:
1. ten plastic or rubber place mats, each painted with one number. (1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
2. index cards with number problems covering all family combinations through 10.

$$\begin{array}{cccc} 1 & 1 & 1 & 1 \\ \underline{+1} & \underline{+2} & \underline{+3} & \underline{+4} \end{array} \longrightarrow$$

$$\begin{array}{cccc} 2 & 2 & 2 & 2 \\ \underline{+1} & \underline{+2} & \underline{+3} & \underline{+4} \end{array} \longrightarrow$$

3. container for cards.

Directions: Place the mats, in order, on the floor.
1st No.
+2nd No.
A student chooses a card and moves the number of spaces indicated by the first number, and then moves the number of spaces indicated by the second number. He lands on #3, and turns his problem card over to see if he is right. The student puts the card down on the #3 mat, and chooses another card.
For group play: If the answer can be given without jumping out the problem, the student gets another turn. If not, he jumps out the problem, goes to the end of the line and another student takes a turn.

//

WHAT'S IN A NAME

Purpose: To classify whole numbers, mixed numbers, improper fractions and proper fractions.

Whole Numbers	Mixed Numbers	Improper Fractions	Proper Fractions
___	___	___	___
___	___	___	___
___		___	___
			___

Materials: (24) 3 X 5 cards
Poster board
Small box or envelope

Directions: On the 3 X 5 cards, put the following: (whole numbers) 7, 6, 8, 24, 31: (mixed numbers) 1 3/8; 5 3/4; 2 2/3; 9 2/3; 8 1/7; $1\frac{1}{2}$; (improper fractions) 9/4; 5/4; 6/3; 14/9; 3/2; 11/10; (proper fractions) 4/15; 36/37; 5/7; 3/8; 11/17; 7/81.
Scramble cards and place in container.
Make six slits in each column on the poster board - $2\frac{1}{2}$" long
Student will take each card from the container and place it in the slit under the proper heading.

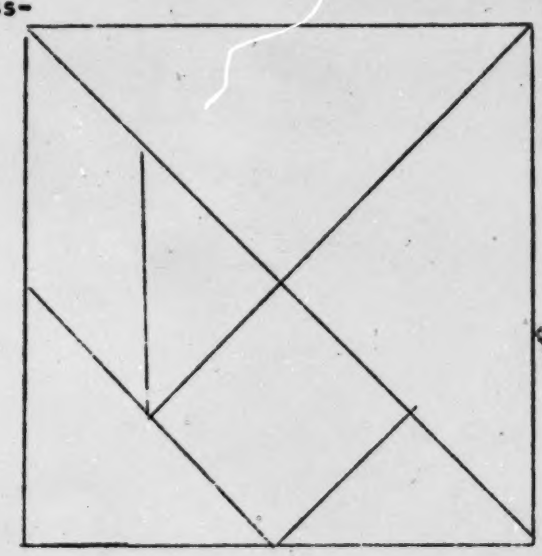
Contributed by Kathy Kalinowski

TANGRAMS

Objective: Make sets of Tangrams for classroom use.

Materials: Pattern for Tangram square
Ditto sheet
Construction paper
Poster or cardboard
Clear contact

Directions: Put four tangram square patterns on a ditto. Run the ditto off on colored construction paper. Glue the construction paper onto poster board or cardboard. Cover with clear contact. Cut each square into its seven pieces. Put each set in an envelope or small box.



RING-A-FRACT

Purpose: To practice adding fractions with like and unlike denominators.

Materials: Hoop or ring about 10" in diameter. Fraction cards (3 X 5's cut in half)

Directions: Make a set of 68 fraction cards with the following fractions on them: six each of $\frac{1}{2}$ and 1/3; eight each of $\frac{1}{4}$; 1/5; 1/6; 1/8; 1/9; 1/10; 1/12. Cover with clear contact - the backs may be covered with patterned contact.

Rules: 2 to 4 play
Shuffle the fraction cards and place them in a pile face down. Each player draws one card. The one with the smallest fraction goes first. Take turns, going clockwise around the group.
The object of the game is for a player, during his turn, to put as many cards in the ring as possible without going over the limit.
For example: the given limit is one. The player draws a card with $\frac{1}{4}$ on it and puts it in the ring. He draws another card which has 1/8 on it and puts it in the ring. His sum is 3/8. His next draw is $\frac{1}{2}$, which he puts in the ring. The sum is now 7/8. The next draw is 1/3, which puts him over the limit of one. He may not put that card in the ring. He scores 3 points (one point for each card in the ring.) Cards are removed from the ring and placed at the bottom of the deck. The next player takes his turn.
The first to score 15 points wins.
Encourage students to make their own rules and variations.

CARROT TALK

Learning Objective: Given the symbol for greater than (>) and the symbol for less than (<), the child in a classroom center will be able to use these symbols between two sets of objects or numbers.

Drawing: On wall at child's eye level - 1 peice of white poster board.

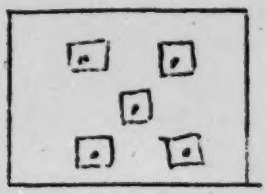
On Floor Under Poster Board:

Blue Numeral Cards	Pink Cards of Sets of Objects	Symbols for > and <

Materials: Peices of blue construction paper $4\frac{1}{2}$" X 6" with one numeral per card from 1 - 20.

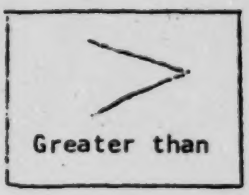
Peices of pink construction paper $4\frac{1}{2}$" X 6" with sets of pictures drawn representing different objects using sets from 1 object to 20 objects per card.

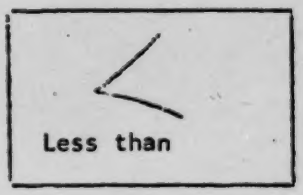
Examples:



Picture of symbol for greater than ( ) on white construction paper. The written word for the symbol is written under the symbol.

Picture of symbol for less than ( ) on white construction paper. The written word for the symbol is written under the symbol.





Directions for Children:

1. Look at the sets on the pink cards.
2. Choose 2 pink cards. Place them side by side with space between the two cards.
3. Choose the symbol for > greater than or < less than to make your number sentence right. Put this symbol between the 2 pink cards.
1. Look at the numerals on the blue cards.
2. Choose 2 blue cards. Place them side by side with space between the 2 cards.
3. Choose the symbol for greater than or less than to make your number sentence right. Put this symbol between the 2 blue cards.

Contributed by Marilyn Rogstad

PASTE THE DOTS

Objective: Student selects and pastes a set of dots to match a given number and number word. (1 - 10)

Materials: folded sheets of newsprint
paste
dots (about 1" in diameter)
container for dots
folder of pocket for newsprint sheets

Directions: Cut a large quantity of dots from colored construction paper. Prepare a newsprint sheet like this:

1	2	3	4
one	two	three	four

3	10	5	9
three	ten	Five	Nine

Student will take a sheet of newsprint, and choose and paste dots to match numbers.

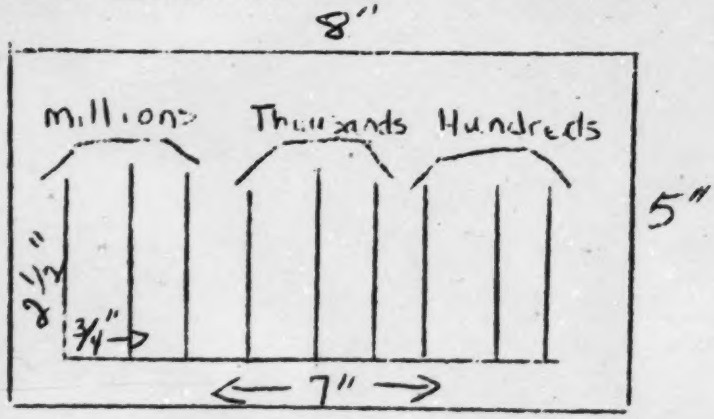
Contributed by Patricia Grendyes

PLACE VALUE FRAME

Objective: Given a large number, either orally or in written form, the student will show "how many" on his frame and write the number.

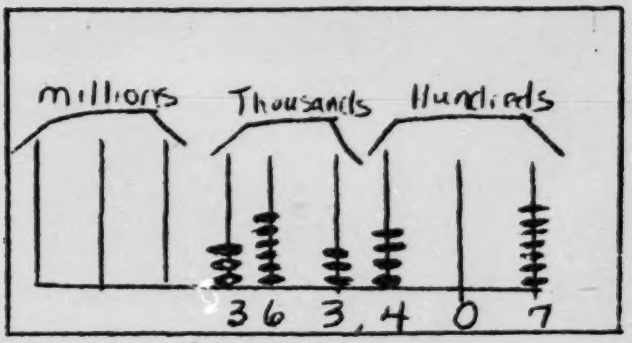
Materials: 5 X 8 cards
Clear contact paper
Poster board for demonstration frame

How to Make:



How to Use:

Show; 363,407 on your frame. Write the number in the space below the frame.



Directions: Students will need a crayon and scraps of paper towel for cleaning their frames. These cards may be used for group instruction (see above) or for partner games.

Like this:
1. Mark your frame to show a 7 digit number. Ask your partner to write the number in the space below the frame.
2. Write an 8 digit number in the space below the frame. Ask your partner to show "how many" on the frame.

***

3. Cover with clear contact,

4. Tape sections together.

Rules: 1. While computing, it is permitted to have any number of beans on the squares.
2. After regrouping to show the answer. there should never be more than one bean in each square.
3. Answers should always show the fewest beans possible. (One hundred should be shown with one bean in the "100" square, rather than one "80" and one "20".

Directions:

Step 1 - Show How Many. Students need to practice showing the value of a number using the fewest beans possible. To show "2", put a bean on the "2" square. To show nine, there should be a bean on the "8" square and the "1" square. Seventy-three would be shown by putting one bean on each of the following squares: "40", "20", "10", "2" and "1".

Step 2 - Addition. To add 29 and 38, first show 29 on the board. Next "feed" 38 into the computer. At this point there may be more than one bean on each square. Now, regroup (exchange 2 beans on the "2" square for one bean on the "4" square, etc.) until the answer is shown using the fewest beans possible... 5 beans in this case - 40 + 20 + 4 + 2 + 1.

Step 3 - Multiplication. To multiply 3 X 289, put 289 on the board three times. At this point, your board will have 3 beans on the "200" square, 3 beans on the "80" square, 3 beans on the "8" square and 3 beans on the "1" square. Now, regroup until you have your answer using the fewest beans possible. (6 beans)

Step 4 - Subtraction. This is the most challenging operation to perform on the computer. Show the minuend on the board. Regroup until it is possible to take away the subtrahend. Like this: 482 - 175. The 80 must be regrouped to show 40, 20, 10, 10. One of the tens must then be moved to the "ones" section and shown as 4, 4, 1, 1. It is now possible to take away 175.

***

....SLIM, RED, FRECKLES, JO-JO AND PEEWEE ARE IN THESE POSITIONS AT THE FINISH OF A RACE:

SLIM IS 20 YDS. BEHIND RED.
JO-JO IS 30 YDS. AHEAD OF SLIM.
PEEWEE IS 50 YDS. BEHIND JO-JO.
FRECKLES IS 10 YDS. BEHIND PEEWEE.

WHO IS THE WINNER? WHO IS SECOND? THIRD? FOURTH? LAST?
HOW MANY YARDS IS EACH BOY AHEAD OF THE BOY BEHIND HIM.
*CAN YOU SHOW THIS ON A NUMBER LINE?

****

NAPIER'S BONES

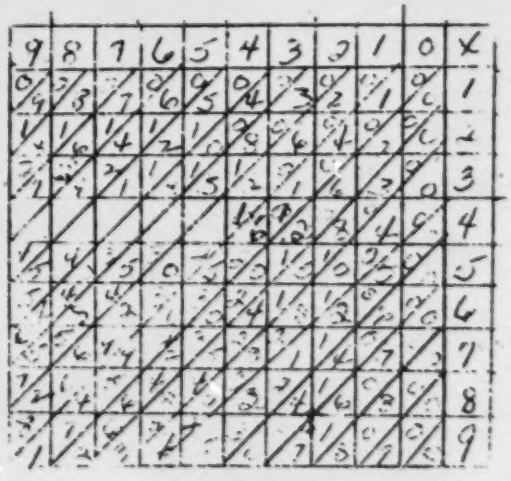
Objective: Children will use Napier's Bones to find products when the multiplier is a 1 digit number.

Materials: Napier's Bones may be run off on a ditto sheet, or for a more permanent set, use poster board or tagboard and cover with clear contact before cutting.

Directions: To make a set of "Bones" complete a multiplication table which is set up like this:

The diagonals are essential as they separate the ones & tens in any 2-digit number.

After completing the table, cut each column so you will have a set of 11 strips, or bones.



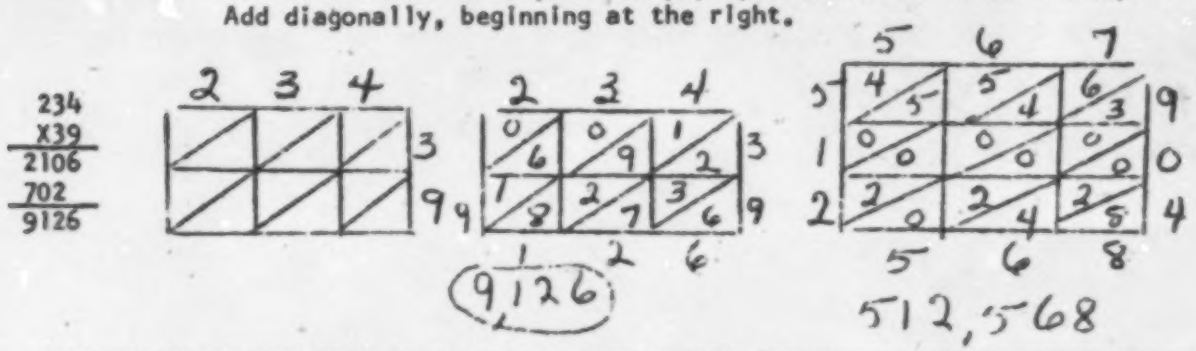
To multiply 6 X 74, take the 7 bone, the 4 bone, and the Index. Arrange them like this: ——→
Move down the Index to row 6. Add just the numbers in the diagonals in row 6. It is helpful to cover all numbers below the 6 row with a blank paper.

****

LATTICE MULTIPLICATION

Note: The lattice method is similar to Napier's Bones and is useful when the multiplier is more than one digit. This method was first used in the 15th century.

Directions: Draw a frame to suit the size of the problem. Put the multiplicand at the top of the squares, and the multiplier down the right side. Fill in the table as you multiply by each number in the multiplier. Add diagonally, beginning at the right.



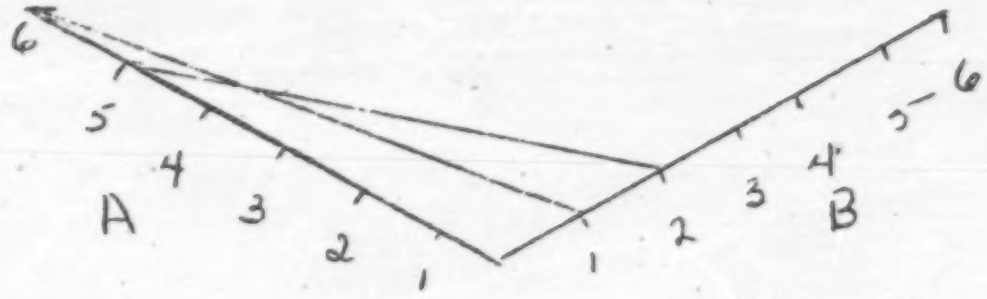
***

1. Copy and complete this table

connect

Side A	to Side B	Sum of Points
1		
2		
3		
4		
5		
6		

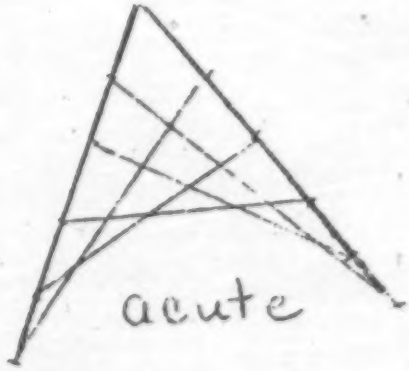
2. Make an angle with sides 3" long. Mark points $\frac{1}{2}$" apart on each side. Number each side from 1 to 6, starting at the vertex (0) and going out. Like this:

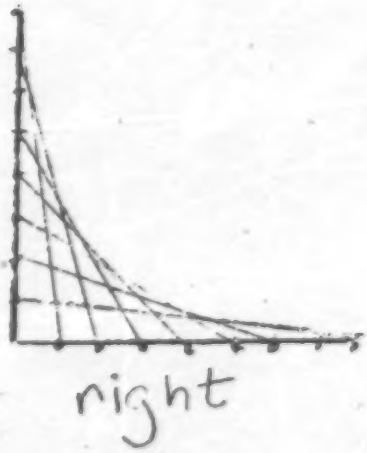


4. Give students practice in setting up tables for angles with sides 4" in length: 6"; 2"; etc.

5. At the same time, give them practice with right, acute and obtuse angles so they will see the different type curves produced.

6. Students will be ready to curve stitch with needle and yarn when they can make their own tables with the understanding that sides of angles must be the same length, and points must be spaces equally on the sides.



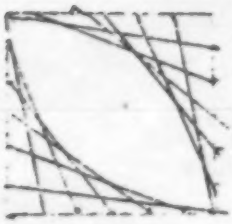


obtuse

Directions: for curve stitching an angle w/needle & yarn: Use a small peice of tape to tape down the yarn end on the back. If children pull too hard and tear their paper, simply tape it on the back and stitch again. Use a sharp needle or pin to punch holes through all points before stitching. For angle with 4 points, go up through 1 on side X, down through 4 on side Y, up through 3 on side Y, down through 2 on side X, etc.

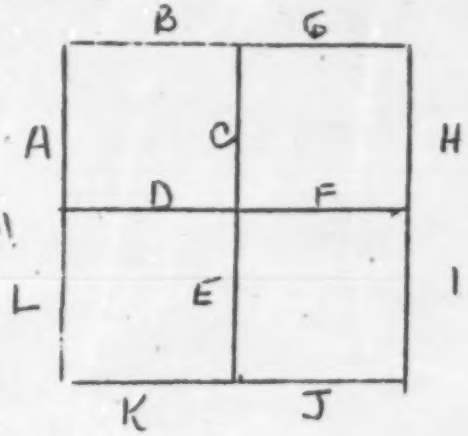
Mind Stretcher: Make an angle with one side twice the length of the other. How will you space the points, keeping in mind that there must be the same number of points on each side?

Try this:



Challenging!!

Then try this:



PATTERNS IN CIRCLES: (Can be drawn or stitched)

On a circle with 24 points, connect:

a	b
1 to 1	1 to 2
1 to 2	14 to 15
1 to 3	12 to 14
2	16
3	17
4	18
5	19
6	20
7	21
8	22
9	23

and 24 to 23
22 to 24
24 to 2

Find this shape ♡ in your design for your Valentine!

a	b
2 to 4	13 to 2
3 to 6	14 to 4
4 to 8	15 to 6
5 to	16 to
6 to	17 to
7 to	18 to
8 to	19 to
9 to	20 to
10 to	21 to
11 to	22 to
12 to	23 to

and: 24 to 23
22 to 24
24 to 2

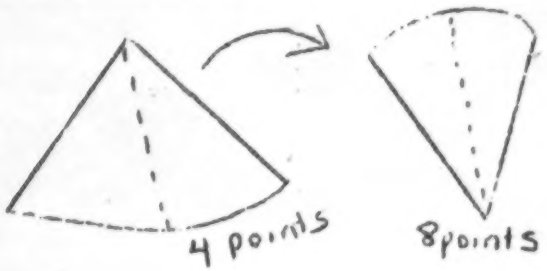
Find this shape

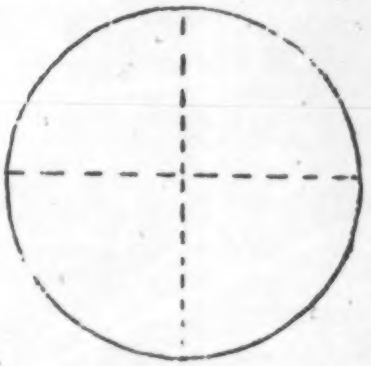
in your design.

Happy Valentine!

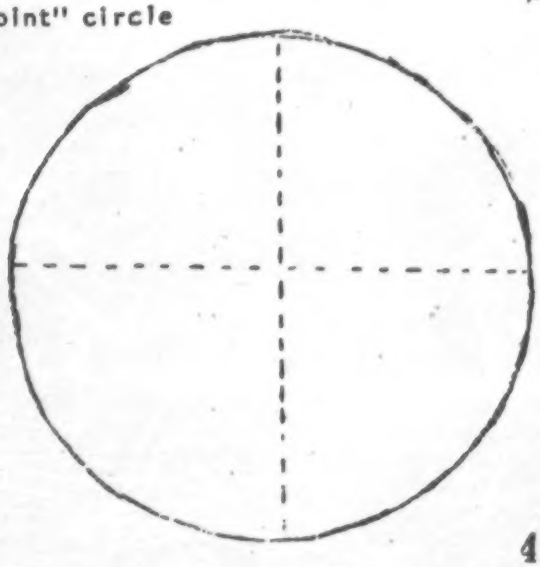
****

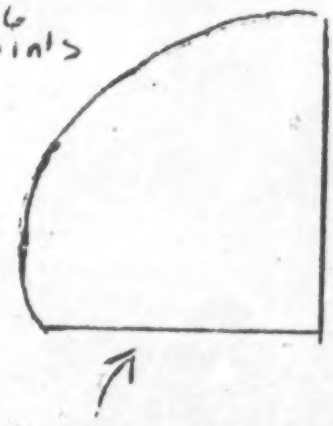
Encourage students to use a compass to make circles. Let them experiment with paper folding as a method of producing points spaced equally around the circumference. Like this:





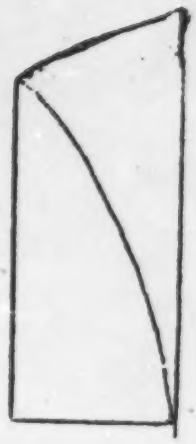
A "12 point" circle

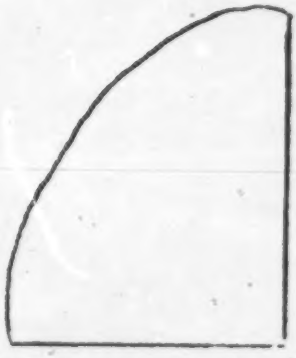




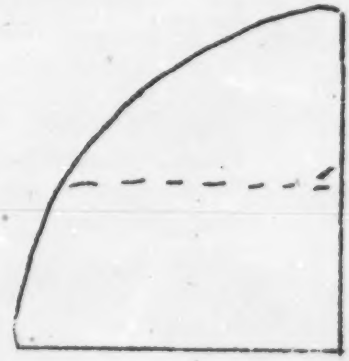
Fold to produce this.

Fold along dotted line

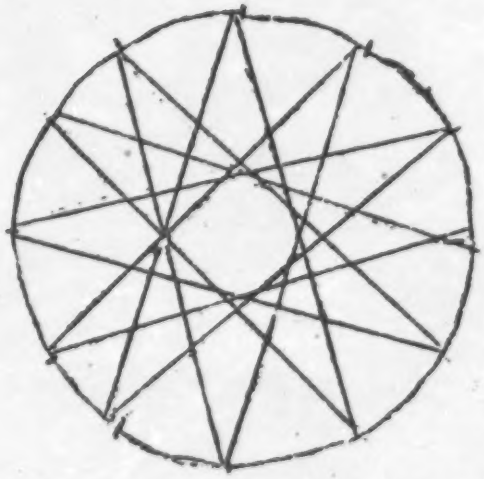




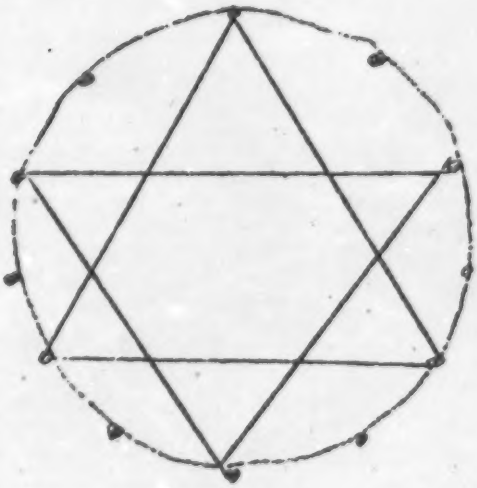
open out to this



Fold along dotted Line



Jump 5 or 7 points



MATH WHIZ

Purpose: To encourage accuracy in computation.

Materials: Blue ribbons, red ribbons, white ribbons, OR
Certificates
Progress chart

Directions: This activity is to be used once a week, say every Friday. It should take no more than 10 minutes, as the stress is on accuracy and quality rather than quantity of problems. Give 3 to 6 problems a week, depending on difficulty of problems. Problems should review skills already attained, and should be changed each week. Keep a record. At the end of 6 weeks, award a blue ribbon to those who scored 100%; a red ribbon for 90%; and a white for 80% accuracy. Or, award an appropriate certificate. Start a new 6 week period.

Note: There is high motivation for this activity...students look forward to it, and take pride in their achievement!

MATH WHIZ
is awarded to

John Tennent

for answering
100%
of Math Quiz Questions
from Sept. 7, to Oct. 18
awarded October 21, 1972

Mrs. John Doe
Math Quiz Judge
5th Grade

Suggested problems: (include subtraction & column addition often)

634	483	6003	709
381	679	+ 547	+301
+ 28	42		
	+ 529		

Example: 634 / 381 / + 28 ← VARY THE FORMAT FROM WEEK TO WEEK ...LIKE THIS

A. $27.63 + $2.47 + $10.30

B. 20 is 50% of what number?

C. 18/690

D. $5\frac{1}{2}$ + $2\frac{1}{4}$

A. ____

B. ____ 5333 - 594

C. ____

D. ____ $\frac{1}{4}$ + 3/8

A. 4739
B. 4831 6/44
C. 4839
D. 5839

A. 4/12
B. 5/8
C. 4/8
D. 3/4
E. None

A. 72
B. 7R2
C. 6R8
D. None of these

1/3 x 1/2

A. 2/5
B. 2/3
C. 1/6
D. 1/5
E. None of these

MENTAL MATH

Purpose: To encourage mental computation and reasoning, and to add a little "spice" to math.

Directions: This activity is to be used once a day, say at the beginning of math. The stress is on having fun - it is not intended to be threatening in any way. Mental math may be put on the board or given orally by the teacher.

Note: Try it - you'll like it, and so will your students!

Mental Math Samples:

- Take 2, add 3, subtract 1; double your answer? (8)
- Take 8; divide in half; add 3 - ? (7)
- Take 6; multiply by 7; subtract 2; divide by 5 - ? (8)
- Take a number. Multiply by 4; add 8; divide by 4; subtract the number you started with. Answer always 2.
- Take a number; add 4; multiply by 2; subtract 2; divide by 2; subtract the number you started with. Answer always 3.
- Write the number of the month you were born; multiply by 2; add 5; multiply by 50; add your age; subtract 250. The first number in the answer is the month you were born, the others are your age.

- Take your age; multiply by 4; add 10; multiply by 25; subtract the days in a year (365); add the change less than one dollar in your pocket; add 115. Answer, first two digits are your age, the last two digits are your change.

- Take a number; add 1; double; add 1; mulitiply by 3; add 3; divide by 6; subtract 2. Answer, your original number.

- Write the following numbers on the board: 4, 5, 6, 7, 8, 9. Teacher can guess the right number if anyone wishes to choose one. Choose any number - multiply it by 6, add 12 and divide by 2. (Solve: Divide # by 3; subtract 2 from quotient)

An excellent source for more:

Crescimbeni, Joseph. Treasury of Classroom Arithmetic Activities; Parker Publishing Company, Inc., Wcay Nyack, N. Y., C1969.

SCROUNGERS AND STRING SAVERS TAKE NOTE!!!

...Some free (and priceless) aids for do-it-yourselfers...

*egg cartons (dozen or 3 dozen size) for tossing games, sorting, Kalah, coverup

*large sides of cereal boxes for making games (use instead of poster board)

*buttons, shells, beans, acorns, etc., for markers, sorting

*boxes from small match boxes to pencil boxes from the school store to grocery store cartons for containers and centers

*yarn, thread, colored string for curve stitching, measuring

*styrofoam meat trays for game boards

*strips of paper and adding machine tape for number lines

*your local printer may be a source of paper - their trash cans often contain a treasure of paper strips, blank stationary, and many sizes and weights of paper.

*use manilla folders for flash cards, playing cards, game boards

*caps from toothpaste and other tubes for game markers

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Games and instructional aids - should you buy them, make them, or do without? Here are some criteria to guide you...

1. Does it have a definite purpose?
2. Is it re-usable? Durable?
3. Will it save you time?
4. Is it open-ended?
5. Are answers available?
6. Are instructions clear?

IF IT'S WORTH MAKING, BE SURE IT'S DURABLE AND RE-USABLE. PROTECT IT BY COVERING WITH CLEAR CONTACT PAPER!